Research Article

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Prevalence of depression in patients of parkinson's disease presenting to a tertiary care hospital at Karachi

Abstract

Objective: To determine the prevalence of depression in Parkinson's disease patients presenting to a tertiary care facility of Sindh.

Study setting: Department of Neurology, Jinnah Postgraduate Medical Centre, Karachi, Sindh, Pakistan.

Duration of study: Six months

Study design: Descriptive cross-sectional study

Subjects and methods: All patients of either gender between 50-80 years of age, having Parkinson's disease for more than 6 months were enrolled. The Beck Depression Inventory (see attached annexure) was explained and half an hour was given to the respondents to encircle the options given in the questionnaire as per the severity of the condition ranging from 0 to 3. If the sum of the encircled number was >9, the patient was labeled as having depression. The questionnaire was administered by the data collector when the patient was illiterate.

Results: Mean age of the total 97 patients were 65.03±11.97 years. There were 49 (50.50%) males and 48 (49.50%) females. Mean beck depression inventory score was found to be 14.65±1.47. Frequency of depression was found in 9 (9.30%) patients.

Conclusion: The prevalence of depression in Parkinson's disease patients was observed in 9.30% patients presenting to a tertiary care facility of Karachi, Sindh.

Keywords: Depression, Parkinson's disease, Beck Depression Inventory

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Introduction

Worldwide the burden of Parkinson's disease is set to rise in the coming years, it was estimated that in Western Europe in 2005 the number of people with Parkinson disease rise from 4.1 to 4.6 million and it is expected to rise two times to 8.7 to 9.3 million in the year of 2030. On the other hand, in Asia the number is expected to increase from 2.57 million in 2005 to 6.17 million in 2030.[1]

Parkinson's disease (PD) is a most common progressive neurodegenerative disorder and is characterized by motor and non-motor symptoms which include sensory and cognitive symptoms, problems of arousal, muscular rigidity, autonomic symptoms and psychiatric disturbances. Along with motor abnormalities Parkinson's disease is associated with many psychiatric problems such as anxiety, sleep disturbance, psychotic symptoms, but depression is the most common co morbid condition in Parkinson's disease can affect 10-70% of Parkinson patients. Psychiatric disturbance have negative impact on the course and management of the disease and especially depression has a greater negative effect on a patient's quality of life, disability and resulting in more decline of cognitive functioning.[2-5]

It is particularly difficult to diagnose depression in Parkinson's patients because the clinical overlap between the two syndromes. At first glance symptoms of both disorders seem similar. The association found between depression, cognitive impairment and elevated plasma homocysteine levels in Parkinson disease. The study concluded that depressed people are more at risk to develop Parkinson disease as compare to diabetic and osteoarthritis while another study suggested that 9.2% lifetime diagnosis of depression in idiopathic Parkinson disease compared with 4.2% of controls. There is evidence that different coping strategies and cognitive styles can increase the risk of depression in Parkinson disease.[6-8]

Another most consistent risk factor of developing Parkinson disease is increasing age. Numerous studies concluded that approximately 5% of patients have an onset before the age of 50 years and 2% of those aged 65 years and above. A number of researches have found that increased risk of developing disease is 1.5 to 2 fold in males as compared to females but other studies have however reported no gender differences. The prevalence of depression in Parkinson disease varies from 20 to 50% and depressive symptoms are seen in all stages of severity of the disease. During the early stages of disease depression can occur in up to 27.6% of patients.[9-10]

Although many studies are available but estimates of the prevalence of depression in Parkinson's disease vary considerably, mostly because of different sampling methods and different questionnaire used for evaluation of depression. Therefore the present study aimed to determine the prevalence in Pakistani population. Based on this study, resource allocation and future preventive and diagnostic planning could be done.

Material and methods

Sample size

The sample of the present research was consisted of 97 patients of Parkinson disease the sample size calculated using the WHO sample size calculator on the following basis:

1. The prevalence of depression in Parkinson's disease (P)=10%,[1-4]

2. Absolute precision (d)=6%,

3. Confidence level (CL)=95%,

4. Sample size (n)=97 Parkinson's disease patients

Sample selection

Inclusion criteria

1. Patients of either gender between 50-80 years of age

2. Patients of Parkinson's disease diagnosed as defined in operational definition

3. Having Parkinson's disease for more than 6 months.

Exclusion criteria

1. Patients having other chronic diseases like chronic Hepatitis, CKD, and Previously diagnosed case of Depression.

2. Not willing to be part of the study

Sampling technique

Consecutive sampling

Data collection

After obtaining approval from institutional review board of Jinnah Postgraduate Medical Center, Informed consent was taken from Parkinson's disease patients who was presenting to the OPD and meeting the inclusion criteria. The purpose, procedure, risk and benefits of the study was explained and confidentiality was maintained. Brief history regarding the duration of disease was taken along with demographics details. The Beck Depression Inventory questionnaire was explained by the researcher to the participants. Half an hour was given to the respondents to encircle the options given in the questionnaire as per the severity of the condition ranging from 0 to 3. If the sum of the encircled number was >9, the patient was labeled as having depression. This information along with the demographic data was entered into the proforma attached as annexure.

Data analysis

Data was entered and analyzed on SPSS version 17. Frequency and percentage were calculated for monthly family income, educational status, and depression in Parkinson's disease patients. Gender was presented as Male to female ratio. Mean±standard deviation was calculated for age, inventory score, duration of disease and Beck Depression Inventory score. Stratification was done for gender, age, educational status, duration of disease and monthly family income to control effect modifiers, chi square test was applied and significance level was taken as 0.05.

Results

Table 1 shows descriptive statistics, mean and standard deviation of age, duration of disease and Beck depression inventory score. Table 2 shows the demographic variables of the sample. Figure 1 shows Prevalence of depression in patients with Parkinson's disease. Table 3-7 show comparison of depression with respect to age, gender, duration of disease, monthly income and educational level.

Table 1 shows that the mean age of the sample is 65.03 years, mean duration of disease is 9.89 and Beck depression inventory score mean is 14.65.

Table 1 Mean age, duration of Disease and Beck depression inventory score

Variables	N	M	SD
Age (years)	97	65.03	11.97
Duration of disease (months)	97	9.89	1.72
Beck depression inventory score	97	14.65	1.47

Table 2 shows most of the adults has educational level (10th grade, 42.60%), monthly income (48.50%), and duration of illness <10 (62.90%).

Table 2 Descriptive Statistics of Demographic Information's of entire sample

Variables	Frequency	Percentages
(a) Educational Level		
Middle (8th grade)	32	33%
Matric (10th grade)	51	52.60%
Intermediate (12th grade)	14	14.40%
(b) Monthly Family income		
<20,000	47	48.50%
20,000-40.000	27	27.80%
>40,000	23	23.70%
(c) Duration of disease (in months)		
<10	61	62.90%
>10	36	37.10%

Table 3 Comparison of depression with respect to age n=97

Age Groups	Depression Yes	No	Total	p-value
≤60	1 (2.1)	46 (97.9)	47 (100)	
>60	8 (16)	42 (84)	50 (100)	0.031
Total	9 (9.3)	88 (90.7)	97 (100)	

Table 4 Comparison of depression with respect to gender n=97

Gender	Depression Yes	No	Total	p-value
Male	4 (8.3)	44 (91.7)	48 (100)	
Female	5 (10.2)	44 (89.8)	49 (100)	0.513
Total	9 (9.3)	88 (90.7)	97 (100)	

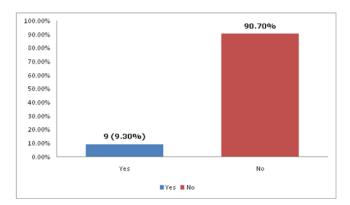**Table 5** Comparison of depression with respect to duration of disease n=97

Duration of disease	Depression Yes	No	Total	p-value
≤10	7 (11.5)	54 (88.5)	61 (100)	
>10	2 (5.6)	34 (94.4)	36 (100)	0.477
Total	9 (9.3)	88 (90.7)	97 (100)	

Table 6 Comparison of depression with respect to monthly family income n=97

Monthly Family Income (in Rs)	Depression Yes	No	Total	p-value
<20,000	6 (12.8)	41 (87.2)	47 (100)	
20,000-40,000	2 (7.4)	25 (92.6)	27 (100)	0.483
>40,000	1 (4.3)	22 (95.7)	23 (100)	
Total	9 (9.3)	88 (90.7)	97 (100)	

Table 7 Comparison of depression with respect to educational status n=97

Educational Status	Depression Yes	No	Total	p-value
Middle	3 (9.4)	29 (90.6)	32 (100)	
Matric	6 (11.8)	45 (88.2)	51 (100)	0.405
≥Intermediate	0 (0)	14 (100)	14 (100)	
Total	9 (9.3)	88 (90.7)	97 (100)	

Figure 1 Prevalence of Depression in patients with Parkinson's disease.

Discussion

Depression is one of the most common non-motor symptoms of Parkinson disease which have significant negative impact on the prognosis of disease and also cause functional impairment in patients. Depression can affect 10–70% of PD patients.[1-2]

Ninety seven subjects with Parkinson disease participated in this study in which 49/97 (50.50%) were males and 48/97 (49.50%) were females. The prevalence of depression in male was 8.3 and in female were 10.2. The overall prevalence of depression in Parkinson patients was found 9.30%. The prevalence of depression in the current study was less as compare to usually quote. Possible reasons for variation included the nature of the population selected, the way the diagnosis is established and different scales used to measure depression. The use of depression scale in this population criticized because of inability to differentiate in motor symptoms which are overlapping but there is not any scale specifically developed for measuring depression in Parkinson disease. In conclusion the research Committee of the Movement Disorders Society (MDS) recommended such scales for screening depression in Parkinson disease; HAM-D, BDI, HADS, MADRS and GDS.[11-12]

However, these studies have consistently shown that depression is the most important factor affecting the quality of life of these patients and more severe cognitive impairment, there is consensus that treatment of depression is always recommended.[13] Depressive symptoms are seen in all stages of PD, and may precede motor symptoms for years. Another study found that sad mood and anhedonia are the key symptoms, of depression in PD. Other features may be present in varying combinations, for example, loss of appetite, sleep disturbance, weight loss, loss of libido, loss of concentration and fatigue. However, many of these symptoms may overlap with symptoms of PD themselves, making diagnosis challenging. Conversely, feelings of guilt or worthlessness and suicidal thoughts are not common in PD.[14-15]

In patients with Parkinson disease, 20% to 50% are considered to have major depression. Several risk factors for depression are described, such as severity of cognitive impairment, female sex, onset of Parkinsonian symptoms before age 40 and a history of depression prior to diagnosis of PD. A Study conducted to investigated prevalence of depression and effects of gender, disease stage and motor type. Findings suggested that depression was more common in the later stages of the disease and there was no significant difference in the prevalence of depression in motor subtypes and gender.[16] We were not able to identify these factors in our study. One of the reasons can be small sample size of the study. A long term cohort study could look to identify some of these risk factors.

Research suggested that the disease itself causes chemical changes in the brain that may lead to depression as shown in a positron emission tomography (PET) study that showed that depressed PD patients have reduced cerebrospinal fluid (CSF) 5-hydroxyindolacetic acid (5HT1A) levels and reduced cortical 5HT1A receptor binding compared with non depressed patients.[6] More research is needed to explore the biological basis of depression in PD patients.[17]

Acknowledgments

None.

Conclusion

The prevalence of depression in Parkinson's disease patients was observed in 9.30% patients presenting to a tertiary care facility of Karachi, Sindh. Clinicians should screen for symptoms of depression in PD and treat them appropriately when indicated.

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